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ABSTRACT

The school furniture of tomorrow will be formed and shaped by design analysis of the learning process rather than by a discipline or maintenance function design. Three of the most significant characteristics of future school furniture will be multiple use, flexibility, and mobility. An interior componentized system will provide spaces for work and study, divide spaces, create atmospheres, and store items. Some anticipated furnishings are: acoustical noise-absorbing furniture, electric carpets to send electrical power supplies and/or audio visual signals throughout a building, screens capable of carrying internal electrical power, and movable library stack units. (Author/MLF)

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"WHAT SCHOOL FURNITURE WILL LOOK LIKE TOMORROW"

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Greeting:

Some of you present today may expect that I will discuss and show far out conceptions of school furniture and equipment for the future - something of a "Buck Rogers" nature. We all wish we could see accurately into the future, but this simply is not possible. To deal only in conjecture would not be of assistance to us and it might even be harmful. This is not to say that we are without opportunities to look ahead a reasonable amount of time. There are significant and defineable trends that earmark the directions of the educational process for the next five or ten years and there are the advances in technology and the developments of products by industry. These things set forth conditions that warrant close study and provide us an opportunity to gain a glimpse of tomorrow.

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As an architect, my primary responsibility is to design facilities to house the educational process. Many, therefore, would assume my first concern is the building. This is not the case. My main concern is the form and purpose of life that the building is meant to house. To attempt to understand facilities that will house the educational process in the future, it is mandatory that I

first concern myself with education and understand what seems to be the form of the learning process for the future. I will therefore discuss educational concepts of the future first because the furniture, its characteristics and its use must be the result of interpreting an educational philosophy.

Although I am going to outline various educational concepts that seem clearly predictable, I must make it clear that no one can give you an absolutely accurate road map. I would also like to add that I will deal more in what I would term the immediate future. It does not help designers of school furniture if we attempt to jump too far into the future. We stand in many regards in an empty desert because much of the required furniture does not exist now to meet today's educational needs. The trends that we are now involved in educationally do set the path for the next five or ten years, and it is in this area that I feel it is reasonable to discuss some needs and make some predictions as to the characteristics and the look of school furniture of tomorrow.

For more than a century, school furniture has been basically, the chair, desk and table. These items, along with storage elements for educational tools and the student's personal property pretty much covered the spectrum of school furniture. The furniture was a response to the educational system.

The highly disiplined, well-ordered classroom was for many years organized, if not structured, as a self contained unit of instruction. Thirty desks, plus or minus a few, faced the front of the room where a teacher held forth. Extraneous movement and conversation were seldom tolerated, and the furniture and its arrangement were designed to accomplish that objective. In fact, most aspects of the educational program centered around the classroom concept. Classrooms are an educational condition that for many years, and I might add

far too many years, have been used as the standard of measurment in both the design of school buildings and judgment as to the quality of the educational system. Furniture is no exception.

As one looks about at education throughout the nation, most of what still happens surrounds this box. An interesting aspect of this approach to education is the fact that the classroom has served as the means of providing an administrative grouping of pupils as well as grouping pupils for the learning process. I will elaborate on this significant point a little later for it is a key to new furniture concepts.

We are all quite aware, or should be, that the majority of the new educational facilities being planned in our country do not contain these boxes called classrooms. Like many conditions in education, the open plan school has become the thing to do, and the rush is on. Open concept schools are the kinds of educational facilities that are going to be coming off the drawing boards and are being built all over America. This, in itself, is a wonderful breakthrough, but it does have chacteristics that cause great concern. The first open plan schools emerged as a result of indepth discussions and planning processes in which educational systems were examined and very carefully projected into the future. Planning was done by a sensitive, articulate process, and the buildings that resulted had much meaning. Too many of the buildings that are being designed today are not a result of this kind of an indepth process and are simply to "keep up with the Jones'" or "look good to others". Much of the same thing has happened to furniture.

Many of the open concept schools and the shattered educational process they will contain are probably headed for great trouble. You must really have an understanding of what is going to happen educationally if you are to successfully create the kind of an educational facility that will respond to

the function and the life it will contain. Again, furniture is no exception in this regard.

Lately, some of the new trends . . . particularly open space planning, individualized instruction, team teaching and variable groupings . . . have started breaking up rigid seating patterns, demanding variable responses from classroom furnishings. Single units of chair and desk as one, have helped. Various table shapes or desk shapes with loose chairs have also helped by enabling variable-ratio discussion and work groups to exist. However, most furniture is still, essentially, not much more than a redesigned variation of the same equipment used in schools more than a century ago. Certainly there have been many improvements in style, material, shape and comfort. However, the basic design is still one of a seat, a desk and/or a table.

School furniture for tomorrow will be a response to the methods used by the learning process. It will arrive at its form and shape by analyzing this learning function to respond to it rather than being designed largely for a disipline or maintenance function. Two of the most significant characteristics of school furniture of tomorrow will be multi-use and immense flexibility. Mobility will be almost as significant a factor.

Let us now attempt to unravel the school of tomorrow by evaluating expected educational trends. Consideration of individual students who differ in educational needs, capabilities and emotions, will become paramount in the school of tomorrow. Perhaps the major difference educationally between the school of the future and that of today will be emphasis on INDIVIDUALIZED LEARNING. As an architect, individualized instruction obviously has additional meaning beyond simply changing the learning process. Considering this point, it is

important for me to understand what educators are talking about, and, from this, interpret these functions into bricks, mortar and furniture.

There seems little doubt that the majority of educators feel that greater attention to the individual differences of students is absolutely mandatory. It will be the foundation of educational systems of tomorrow. There will be a variety of approaches to presenting an educational system that recognizes these unique differences in young people. But, regardless of these variations, there are profound implications not only in the educational system, but also in the school building and school furniture.

Learning for students in the schools of tomorrow will be based, primarily, upon their individual abilities, motivations and interests. Integrated instruction materials will be developed in functional lesson units rather than in larger courses or curricula now existing. These lesson units will range from just a few minutes to more than an hour, and they will provide concepts and related information which the student can transform into knowledge and judgment concerning the topic. The lesson unit approach to instruction will enable both the student and the educational system to lessen the degree of redundancy in instruction, and, at the same time, increase efficiency by permitting intensive learning to take place at the student's own pace. Schedules in a school facility of tomorrow will be immensely flexible, and, in many cases, will be intimate ad-hoc arrangements between an individual student and a teacher. There will be no classes per-se as we envision them today.

There will be much technology supporting this individualized learning. Sometime in the future, computer assisted instruction will play a significant role. In the next 10 years, there will be a vast array of new media available

which will be designed in packages of learning for an individualized course of education.

Perhaps this is where trouble often starts because, tragically, this is the ending point for many people as they look to the future and deal with change. It would seem obvious that if an educational system sincerely aspires to individualize learning, then everyone involved would realize that this changes almost every other aspect as to how teachers and pupils function, what furniture is needed, what kind of buildings are required, what kind of tools are needed and almost every other thing or human function that is involved in the educational process. The key point I mentioned previously concerning grouping for administrative purposes and grouping for learning comes into play in a very significant way. If the educator accepts individualized learning as his goal, then almost everything else must adjust to accomodate this goal if he is to achieve it.

Perhaps the biggest adjustment will be the CHANGING ROLE OF THE TEACHER. If the goal of individualized learning is carried out, it is probably safe to say that, as a minimum, 70% to 80% of what a teacher does in a school today will not be done in the future. It requires a total alteration of the learning process and all that is involved. The teacher, in this new role, will primarily manage the learning process and educational program, and will also provide counseling and motivational - inspirational support for his or her students. No longer the verbal source of facts, the teacher will spend time exploring concepts and ideas.

Let us quickly look at this new role of the teacher. A basic condition of education in America is that it reflects the needs and desires of each individual community where it exists, and, thus, it has many subtle variances

as you examine it from school district to school district. I do feel, however, there are basic principles involved that can and must be understood in order to comprehend the next decade in education and, thus, comprehend facilities and furniture.

I assume that you realize education is not going to take place in a classroom with a teacher lecturing to a group. I will present my viewpoint of a teachers role in the future by breaking it into six broad classifications. The functions are not extremely precise and variations will most certainly occur, but it does seem reasonable that a broad understanding of what teachers will do can be found among these six basic areas.

Time does not permit me to go into detail concerning the various aspects of the teachers role. I will suffice today by merely listing these six categories. They are:

Manager of the educational program and learning process for a group of students.

Provide counseling and motivational support for students.

Develop and manage instructional materials of a particular subject area.

Listen to small group discussions.

Seek out and organize learning experiences in the community.

Manage interns, aids and secretarial help.

It is mandatory that we understand this changing role of the teacher if we are to predict the furniture of tomorrow.

Following the individualizing of the learning process and the changing role of the teacher is the next massive adjustment, and this is a trend that I call "THE LEARNING PATH OF A STUDENT". Perhaps this can best be illustrated by a drawing. As a student moves through this new learning path, his needs for facilities and furniture have changed distinctly from the old classroom

teacher/lecturer mode. As we move from this point, we come upon another trend in schools which can be termed FLOW NOT SURGE. The learning path of the students indicates a totally different people movement situation within a school building. Within the schools of tomorrow you will no longer find classes which cause set number to move "In Mass" from one situation to another at a designated time. In lieu of this you will find rather quiet flowing situations with students coming and going individually and in small groups. Students will also move out of the buildings as they pursue their learning path. This change is extremely significant to architecture and furniture design for it makes available a whole variety of new choices and needs regarding shapes and spaces.

I spoke previously of using the classroom for grouping students for administrative purposes and for the learning process. The tendency in the past has been to do both within the same group; basically that group has been a class. In the schools of tomorrow, there will be a separation of this grouping, and we will have new terms and new functions. A word used commonly today is "HOUSES". In most cases, educators are referring to administrative groupings when they use this term. I again must add, however, that this is not completely true, and some do use the house to group students in relation to disiplines. I think that, most of all, houses have come about becuase of a need to find a place in an individualized school where a student could "Relate himself a little more to a group" or "Put his roots down". Another way to describe it is a "Hang your hat space".

There are two conditions in life that every human being must satisfy, no matter what his or her age might be. These two conditions are a sense of territory and a sense of belonging to a group. It is possible in a fully

individualized school to loose most or all of these two qualities if great care is not taken. It is in these areas where the word house probably has its greatest meaning as attempts are made to satisfy the need for the conditions of territory and group. This says something to us in relation to furniture. Such things as where you hang your coats or where you store your personal belongings become important. The old steel locker located in a hallway or locker bay simply is not the answer to tomorrow's school.

The isolation within which most education operates is not suitable to meet the needs of either today or, especially, the future. We currently hear comments on the relevance of education, and it is obvious that many learning experiences will be moved out of buildings, and education will become involved in LEARNING EXPERIENCES IN THE COMMUNITY.

It appears that education in the future will actually become a part of life and a part of the community. No matter where a school is located, it is always surrounded by people, business, and life itself. To be truly relevant and meet needs of individual students, the surrounding community will be utilized for valuable learning experiences.

Education of the future will not be contained within the walls of a school, but literally, will be based upon and involved with the entire community. The school will become a base of operations, and there will be constant movement to and from it. Traffic patterns, size of facilities, and equipment to be included in the building are some of the conditions that will be greatly changed by this educational trend.

In discussing specifics as we look towards tomorrow, it seems to me that the most powerful one is the CONCEPT OF THE ENTIRE INTERIOR OF A SCHOOL BUILDING AS A SYSTEM. I believe there will be less concern with an individual

piece of furniture, a specific wall, or other things in the interior space of the school. The buildings themselves will capture a "chunk" of space and provide controlled shelter in which the learning process will take place. Some would describe it almost as a "non-restrictive architecture" approach to building design. Within this "chunk" of controlled space the necessary functions will be cared for by an INTERIOR SYSTEM comprised of components that will provide necessary spaces for work and study as well as dividing spaces, creating atmospheres and storing items.

Furniture will be selected differently in the future. It will be purchased or selected by persons other than those generally responsible for this function today. Most of all, it will be selected as an integral part of the design development process. Architects and Professional Educational Planners will be the main determiners of what furniture goes in a building. The purchase of furniture will not be done by a person or department that is unrelated or not intimately involved in the design development process.

Also, there will probably be a change in the way furniture is presented. The big, thick catalog is on the way out. Centers displaying actual systems groupings, where you can see, feel and plan what you need will become common. They will provide space for the educational planner to work on his concepts. He will be able to actually use the components of the system in an area of open space and test his ideas to assure proper function, mobility, felxibility and beauty.

There will be basic components that will do many things. There will be a substantial increase in the multi-use of an item of what we now would term

furniture. There will be components that will provide places to sit, places to work, and, places to store in addition to allowing educators ways to build atmospheres and different group sizes. Instead of thick furniture catalogs with hundreds and thousands of different kinds of things, we will be working with fewer pieces, but these pieces will enable us to build an infinite variety of learning situations. Perhaps some of these drawings will give you a glimpse of this idea.

Forms and shapes will be simple. Perhaps plastic will be one of the heaviest used products because of its ability to be formed into durable and pleasant looking forms. We are beginning to see the creation of a simple form that can become such things as a table or chair. It could also be stacked to form a screen or put together to make storage units. We will see more of these kinds of things.

Removable accent panels for basic pieces of furniture will probably become common. These panels will be used on chairs, horizontal surfaces, vertical surfaces and storage units. They will be added to "neutral color" base components to change the look and feel of the furniture. Through this medium, adjustments of basic furniture to serve different ages will be made possible.

Accoustical noise asorbing furniture will be common. The ability of any item of furniture to absord sound will be almost mandatory. We may well begin loosing our accoustical ceilings very soon, as we approach the "non-restrictive architecture" method to capture space. Thus, there will be increasing need for more sound absorbing surfaces and there won't be much left to meet this need other than furniture and carpet.

Due to the great need for flexibility and mobility, furniture must be able to be stored in a compact and attractive manner; much of the storing will be in the open space of the school. There will be fewer closed storage rooms. Quick adjustments for group sizes, age levels, and different functions will be mandatory. As a teacher or a pupil, you will literally claim your area of space for a particular need at a particular time, and then reach for the pieces of component furniture you need and create the kind of a setting and function you require.

Because of the many current electrical teaching tools and the vast number to come, electricity will be of great importance in the school of tomorrow. We fully expect the electric carpet to be in full use in a relatively few years. This is a new invention that is a completely new way to send an electrical power supply and/or audio-visual signals throughout a building. With this electric carpet you will be able to receive electrical power, sound and pictures at any point in a school without being bound by fixed floor or wall power outlets, long extension cords or antenna wires -- with nothing visible other than normal looking carpet. There are two main components, the carpet underlay and the devices that will be inserted into the carpet to pick up power and audio-visual signals. It is projected the system can distribute up to 1000 channels of audio-visual signals throughout its area. The signals from television, telephone, computer teminals, audio-visual aids and other communication devices are converted to radio waves and fed into the underlay. A push down device picks them up to reconnect them for use. The push down device is a simple probe. It can be at the end of an ordinary cord, or hidden in the leg of a chair, a carrel or similar object. This carpet will not only

change the construction of the school building, but it will certainly change the nature of school furniture.

In the meantime, we probably are going to hear more about "Wet Columns". They are simply structural columns that penetrate into the loft space of a school. Added to such a strucural column is an element of space surrounding it, and in this space are various kinds of services which are brought down from the loft into the school building. Various kinds of furniture can pivot from these wet columns that carry a wide array of services to electrical power and create the kinds of functions and spaces necessary to today's individualized learning situation. These "Wet Columns" greatly increase the adaptability of the interior of a school.

A particular item of furniture that it would seem we most assuredly are going to see is a screen that is capable of carrying electrical power within itself. These screens will do a number of things. Obviously by moving from a source of power and plugging one screen into the other, this essential service can be moved about the open space. At the same time this is happening, the screen can provide a method of attachment for the various components that I have outlined. This will give us surfaces to write on, surfaces to project on, surfaces to store things in, or, simply surfaces to accoustically and attractively divide space into smaller increments. This screen is one of the most critically needed furniture items today.

Perhaps the chair will provide more than a place to sit. It could become significant as a place to activate electrically powered learning devices. The chair could obtain its power from the electric carpet. It could be designed to receive cassettes and small audio-visual lesson units, or to connect

to central learning systems and resources for example.

The floor is, in itself, a valuable item when considering furniture. It is tragic how it is overlooked today by many manufacturers of furniture. Several hours in an open space school AT ALL GRADE LEVELS will quickly show its use and some needs. One need is a tote tray that has a removable stiff top that can be laid on the carpet and used to write or draw on. I understand at long last there is one on the market. Another need is low cube shaped tables for putting things on or writing on when older students sit on the floor to work individually or meet as small groups.

It is my opinion that the day of the steel locker, as most of us currently envision it has passed. Coats will probably be hung in open space as they are hung now in most office buildings or other public spaces. There still will be some sort of a locked place for students to place their valuables, but it will probably be much smaller and more casual in nature. As students are grouped into houses or other administrative units to provide the condition of group and territory, we will find this locker becomes highly mobile in nature, and, most of all, quite attractive. It is my opinion that the locker will become an attache case. Again, we do not have masses of students moving; in lieu of this we have the flow that I spoke of earlier. Students will be coming and going at different times as they go to various learning situations in the community. This situation requires a distinct change in the locker approach.

Mobility will be keynoted in the furniture of tomorrow. In today's schools, we have already taken away the walls from our old library, and we now have a materials resource center which is frequently the heart of the school. In most cases, we place the stacks that hold the books on the floor

with the idea that they can be moved. I feel that we will redesign our library stack units so that we can slide a jack with wheels under them, activate the jack, and quickly move the very heavy stack to another location in the building. There is such equipment on the market today which can move a stack weighing up to 4,000 pounds. It can be done easily by the smallest teacher. This quality of instant mobility will be embodied in the design of all pieces of furniture. The furniture will be such that you can "grab your piece of space" and develop with it what you need or want.

I think the furniture of tomorrow will provide a greater latitude of use as pertains to age level or what is being studied. The schools of tomorrow could well involve people of all ages at the same time in the same building. Also, in the schools of tomorrow, we could be using a building for secondary education in the morning and for an elementary level in the afternoon. The kinds of furniture and things that we have will not be specifically tailored to a particular age level, but will be multi-use in their approach.

I think that there will be many things, and these could be called furniture, that will enable the building of "atmospheres" in schools. The department store approach to education will be applied more and more. In a department store, the building itself is usually quite incidental to what you see and what you use. Areas of space within the store change completely from time to time in their functions and in their appearances. All of this is done, in many cases, with a very few standard items. Again, I stress that we will be using simple forms that will do many things.

I hope that I have helped make you aware of the unlimited potential of furniture in tomorrow's schools. Most of all, I would urge those

primarily responsible for furniture to look more carefully at the directions in which education is moving. These directions are requiring education to take on almost a total change rather than simply adding a little more to what they already have. The designers and manufacturers of furniture must realize this if they are to come forth with the kinds of designs that will meet tomorrow's needs. There are many cases now where architects and educators are involved in designing furniture to equip their new buildings simply because nothing exists on the market to do the job. Perhaps there have been more advances in office furniture than there have been in educational furniture.

As we look toward tomorrow, and what appears to be the total interiors system approach using simple components which are highly adaptable, flexible and mobile, let us not forget the powerful trend to humanize the entire educational process. Things must be warm in their appearance as well as functional in their use. They must invite a student, not be something which is disipline oriented. Thank you.